

**Testimony of
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Space
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Mr. Chairman, Members of the Subcommittee, Ladies and Gentleman. It is a pleasure to be here today to discuss the continuing evolution of commercial space transportation and the opportunity we have to establish the financial underpinning for next generation systems. Indeed, with the maturing of reusable launch vehicle technologies, there is now an unprecedented opportunity for the United States to lower space launch costs and recapture its leadership in the international launch services market, creating significant benefits to the economy.

Developing a new space launch system is a very expensive, high-risk, and time-consuming undertaking. Even after the investment of billions of dollars in development and upgrades over many years, and despite successful track records, rocket failures and program delays are not uncommon, as the recent Delta III, Titan IV, Ariane V and Zenit failures will attest. Consequently, in the U.S. and abroad, governments have historically led the development and provided the lion's share of the funding for new launch systems. For example, during the early 1980's, the French-led consortium of governments provided billions of dollars in direct subsidies to develop the Ariane launch system, the primary focus of which has always been the commercial launch market. According to the international consulting firm Euroconsult, during the 1988-1997 time period, Arianespace leveraged its government support to capture over 53% of the worldwide commercial satellite market, a market which had

previously been dominated by the U.S.

The commercial launch market is growing rapidly and recently has surpassed the government's demand for launch vehicles and services in total size. It is estimated that in the next ten years there will be some 1500-2000 satellites that will need to be launched into space. This represents a major increase in the number of satellites, which is primarily due to the growing market for telecommunications products and services that will be supplied by the commercial low earth orbit (LEO) constellations, such as Iridium, Globalstar, Skybridge and Teledesic. These new systems require anywhere from tens to hundreds of satellites to provide global coverage. Additionally, there is unprecedented growth in the geosynchronous satellite market which, it is estimated, will still comprise at least 50% of the commercial market in the next decade. Finally, many believe that there is enormous potential for other commercial space-based commerce if only the cost of access to space can achieve an order of magnitude reduction comparable to that experienced in the satellite manufacturing industry over the past 5 years. Nevertheless, supply and demand economics alone may not significantly lower the price of launch vehicles.

To make a dramatic change in the economics of space launch systems development and operation, a bold new approach is essential. NASA's initiative on the X-33 program has responded to this requirement. The premise that a fully reusable space transportation system would inherently be less costly to the customer than building a new expendable vehicle for every launch is the overarching rationale for the X-33 program. Moreover, NASA believes that - rather than having the government develop a new system itself - if industry designs and develops one to meet the needs of the commercial as well as the government market, and if industry participates in the financing, the overall development cost would be considerably lower. To help attract private

capital, NASA has provided funds to develop key new technologies that would help reduce the risk sufficiently to make the venture financially viable. Lastly, once implemented, this new system or systems could do three things: 1) reduce the government's overall costs for space transportation, which will be significant in the International Space Station era; 2) respond to the needs of the satellite industry and thereby enhance the global competitiveness of U.S. launch service providers; and 3) stimulate the development of new space products, services, and businesses that have heretofore been unaffordable due to the cost of access to space.

Rather than the role that the government has assumed in the past as the primary (if not exclusive) source of direct funding, the new concept envisions the government indirectly enabling development of new U.S. launch capabilities. It is appropriate for the government to retain a significant stake in launch system development given the benefits it will reap. The government should continue to advance critical technologies that are not mature enough to be used for commercial applications. If implemented consistent with NASA's programs, these technologies would have broad potential application and would not be tied to any one project. Second, and most importantly, the government can also assist industry in raising the private debt financing necessary to complete development and construction of the next generation of launch vehicles.

In Lockheed Martin's view, the most straightforward and effective means of facilitating private investor confidence would be through a government loan guarantee program. Separately, if the new system meets the government's own launch requirements, the government should consider becoming an early customer, signing a "bankable" contract that could be helpful to raise private financing. This is particularly important to both the financial markets and the satellite customer community. Lockheed Martin believes that private capital will be available provided that the government steps up to an appropriate role as

facilitator during this transition to a new industry-led paradigm.

The highly technical nature of new launch vehicle development -- combining complex engineering and chemistry to push to the extremes of the laws of physics -- creates risks that cannot be well-measured by the global private investment community. These risks translate inversely to the availability of private financing for ventures as potential investors critically examine the technical, cost and market risks associated with each proposed project.

We believe, however, that S.2121, the Space Launch Cost Reduction Act, would make private debt financing feasible. The bill provides for loan guarantees that could be used by U.S. developers of new launch systems, both large and small, to help raise private debt. To ensure appropriate allocation of risk we believe private industry should be required to provide an appropriate level of upfront equity funds, the most risky element of any financing. A loan guarantee allows the government to share program risks with minimal budgetary outlay -- a decided advantage in these times of tight budgetary constraints. Our discussions with the members of the financial community have confirmed the view that given the high risks of launch vehicle development (particularly in the earlier stages), it will be literally impossible for companies to obtain private loans without such a guarantee. While the bulk of development costs arise early in the program, non-guaranteed debt would not be available until much later, shortly before a system becomes operational.

In addition, since the cost of financing can range from 10 to 20% of total capital costs, S. 2121 could serve to lower the total capitalization required by a project by several hundreds of millions of dollars -- a reduction that would ultimately be reflected in the price to the commercial and government customers. Therefore, Lockheed Martin sees loan guarantees, and the S.2121 bill in particular, as an important prerequisite to privately financing next generation launchers.

As the Nation transitions these undertakings from primarily a government responsibility to an industry-led responsibility, there is a vital "facilitator" role for the government to play. As a facilitator, the Government can employ new mechanisms and financial instruments that would help advance new high-risk ventures, allocating such risks as appropriate to each of the benefiting participants. There are a number of precedents demonstrating how the government has fulfilled that role.

As much as the technical challenges of new space transportation systems are constrained by the laws of physics, so too are the business challenges by the laws of economics. Lockheed Martin applauds Senator Breaux on his initiative to foster the commercial development of new space delivery systems utilizing economic incentives. We believe this approach is visionary, yet has immediate down-to-earth financial implications. With government and industry working together as partners, the S. 2121 mechanism could become the economic engine that opens up the venue of space to entrepreneurs, businesses, and to the U.S. economy -- a development from which we all shall reap substantial benefits.